



May 31st, 2022

Ms. Liane Randolph
Chair
California Air Resources Board
1001 I Street, Sacramento, California 95814

SUBJECT: Transfer Flow Inc.'s Comments on Proposed Advanced Clean Cars II Regulation

Dear Chair Randolph:

Transfer Flow, Inc. would like to thank the California Air Resources Board for the opportunity to submit written comments on the proposed Advanced Clean Cars II (ACC II) regulations and to express our strong opposition to the ACC II regulations. Banning all forms of internal combustion engines, regardless of how clean an engine may be, and eliminating all potential future technological advancements that may be developed is a disservice to both Californians and the technology sector.

If CARB requires all vehicles to be battery electric vehicles (BEV) or fuel cell electric vehicles (FCEV), CARB is simply pushing the emissions "upstream." An electric vehicle is only as clean as the electricity used to power it. This has further implications for the section 177 states that have adopted California's automotive emissions standards but may not have as clean of electricity as California is lucky enough to have.¹

During the ACC II workshops, CARB staff repeatedly stated that a number of years ago, CARB did some preliminary research on hydrogen (H₂) internal combustion engines (ICE) and that there wasn't a lot of public interest. Just because there wasn't a lot of interest then doesn't mean that interest in the technology couldn't be revised sometime in the future.² CARB's responsibilities should be to regulate criteria pollutants and greenhouse gasses, not dictate to the industry how to achieve those requirements.

Furthermore, when evaluating vehicle emissions, life-cycle emissions should be considered rather than day-to-day emissions.³⁴ Although the average electric vehicle is cleaner than the average gasoline-powered vehicle, it has been demonstrated that after emissions from

¹ <https://www.forbes.com/sites/tilakdoshi/2020/08/02/the-dirty-secrets-of-clean-electric-vehicles/?sh=28d5d8d8650b>

² [Toyota commissions Yamaha Motor to develop hydrogen-fueled engine \(cnbc.com\)](https://www.cnn.com/2019/04/25/autos/yamaha-hydrogen-engine/index.html)

³ <https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1530-9290.2012.00532.x>

⁴ <https://energy.mit.edu/publication/on-the-road-in-2020-a-life-cycle-analysis-of-new-automobile-technologies/>



manufacturing and disposing of the much larger battery are considered,⁵ Toyota's Rav4 hybrid is cleaner than Tesla's Model S over the complete life cycle of the vehicle.⁶ This is a prime example of why it is bad policy for CARB to dictate technology to industry. CARB should dictate emissions levels and allow the industry the freedom to meet those standards however the free-market dictates and vehicle emissions should be evaluated using a full life-cycle emissions analysis.

Another example of why it is detrimental for CARB to dictate to the automotive industry what technologies the industry is allowed to develop is internal combustion propane and natural gas-powered vehicles. Without using modern automotive emission reduction technologies, propane and natural gas internal combustion engines are already as clean as modern gasoline-powered internal combustion engines.^{7,8,9} If modern emission reduction technologies were applied to propane and natural gas-powered vehicles, they would likely be cleaner than electric vehicles when considering complete life-cycle emissions. Just because emissions control technology usage on propane-fueled ICEs has not yet been fully explored or vetted, does not mean that CARB should eliminate the automotive industry's ability to develop cleaner technologies. Especially considering that propane and natural gas already have developed infrastructures while EV and FC infrastructure still needs to be developed and built.

CARB's ban on all internal combustion engines is especially concerning for California citizens whose lifestyles may not integrate well with a 100% ZEV requirement such as people that live in urban environments or have special requirements such as towing. Additionally, CARB's proposed ban on ICEs poses additional challenges for Californians who want to travel outside of California to places that do not have established EV or FC infrastructure. A PHEV is only cleaner if the hybrid part of the car is being used. The car becomes dirtier than a traditional ICE when the hybrid part of the car is not used. Some consumers may choose to not use the hybrid part of their vehicle at all, especially if they live somewhere without an established EV infrastructure or have trouble charging such as a mobility challenged person that does not have access to charging at their apartment or house.

Pacific Gas and Electric's (PG&E) consistent lack of regular maintenance of their equipment has been shown to have caused several of California's wildfires in recent years. In 2019 PG&E pled guilty to 84 counts of involuntary manslaughter for causing the 2018 Camp Fire that decimated Paradise, California. PG&E was also responsible for the Dixie Fire. Asking Californians to be dependent on an energy source that has proven itself unreliable is unfair to the citizens

⁵ <https://www.netzerowatch.com/new-study-large-co2-emissions-from-batteries-of-electric-cars/>

⁶ <https://www.youtube.com/watch?v=MEqxaH47DTs>

⁷ <https://propane.com/newsroom/can-do-journal/the-secret-behind-a-cleaner-vehicle-fuel/>

⁸ https://afdc.energy.gov/fuels/propane_basics.html

⁹ <https://afdc.energy.gov/vehicles/propane.html>



affected by these wildfires. How are everyday citizens supposed to charge their EVs when the power lines are down due to wildfires that the same utility has caused by neglect of their equipment?

CARB's proposed regulations are not technology-neutral if they inhibit or give an advantage to certain technologies over others irregardless of how few or many emissions are created.

In closing, Transfer Flow, Inc. is grateful for the opportunity to comment on the proposed Advanced Clean Cars II regulations in the State of California. Please feel free to contact us with any questions regarding our comments.

Sincerely,

Laurel Moorhead

Laurel Moorhead, E.I.T.
Regulatory Compliance Engineer

Lisa Johnson
Chief Executive Officer